Group Art Unit: 2884
Examiner: Lee, S.

Atty. Ref.: H 2182

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

Applicants : Martin Klein et al.

Appl. No. : 10/047,556

Filed : October 23, 2001

For : DETECTOR

MS Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

**RULE 132 DECLARATION**

Sir:

I, Martin Klein, am a citizen of Germany and reside at Glauchauer Weg 10, 68309 Mannheim (new address) (old address: Seckenheimer Strasse 46 B, Mannheim 68165), Germany. I have a doctorate degree in Physics and I am currently employed by Heidelberg University.

I am one of the two named inventors in the above-captioned United States patent application and I am familiar with my patent application. I also studied and am familiar with U.S. Patent No. 6,429,578 which issued to Danielsson et al.

I conducted simulation analyses to compare absorption efficiencies of three different converter devices. It has been my experience that the simulation program I used provides a close approximation of actual tests. Additionally, the simulation analysis is very good for comparing the absorption efficiencies of different converter devices.

The Danielsson et al. patent focuses on the detection of X-rays. As a result, my simulation analyses were carried out to compare absorption efficiency for X-rays having energies between 10 keV and 150 keV.

The first converter device simulated in my analysis was a conventional GEM foil having copper electrodes with thicknesses of 5 micrometers disposed on opposite respective sides of an insulator. The absorption efficiencies for that simulation are represented by the lowermost line on the graph attached to this Declaration.

The second converter device that was subject to my simulation analysis had an additional layer of copper of 5 micrometer thickness on one of the copper electrodes of the conventional GEM foil used in the first analysis. As a result, the second simulation had a copper layer of 10 micrometers thick on one side of the insulator. This second simulation analysis was intended to simulate the embodiment of Danielesson et al. set forth in claim 11 of the Danielsson et al. patent. Absorption efficiencies for that second simulation are represented by the center line in the graph.

The third converter device simulated in my analysis had a 5 micrometer thick layer of gold on the copper electrode on one side of the conventional GEM foil. Thus, the third test sample conforms to the claims of my above-captioned patent application in that the converter layer is formed of a material different than the conductive layer on which the converter layer is arranged. My patent application focuses on neutron detection, and gold would not be chosen as a converter layer for neutron detection. Conversely, the converter layers used for neutron detection would not be used for X-ray detection. I chose a gold converter layer for the third simulation to provide a meaningful comparison to Danielsson

et al. The absorption efficiencies for the third simulation are shown by the uppermost line in the graph.

The vertical axis in the attached graph represents absorption efficiencies and is presented as a logarithmic scale. The attached graph shows very significantly enhanced absorption efficiencies for the third simulation (i.e., my claimed invention) as compared to either the first or second simulations. In particular, efficiencies achieved by the third simulation (the claimed invention herein) can be as much as ten times higher than the absorption efficiencies for the second simulation (Danielsson et al.). The magnitude of this enhanced absorption efficiency of the third simulation was greater than I would have expected.

I declare that all statements made herein on my own knowledge are true and that all statements made on information and belief are believed to be true and further that these statements are made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States code and that such willful false statements will jeopardize the validity of this application and any patent issued thereon.

Dr. Martin Klein

Martin Klein

Date: Heidelberg, 5. 5. 2006